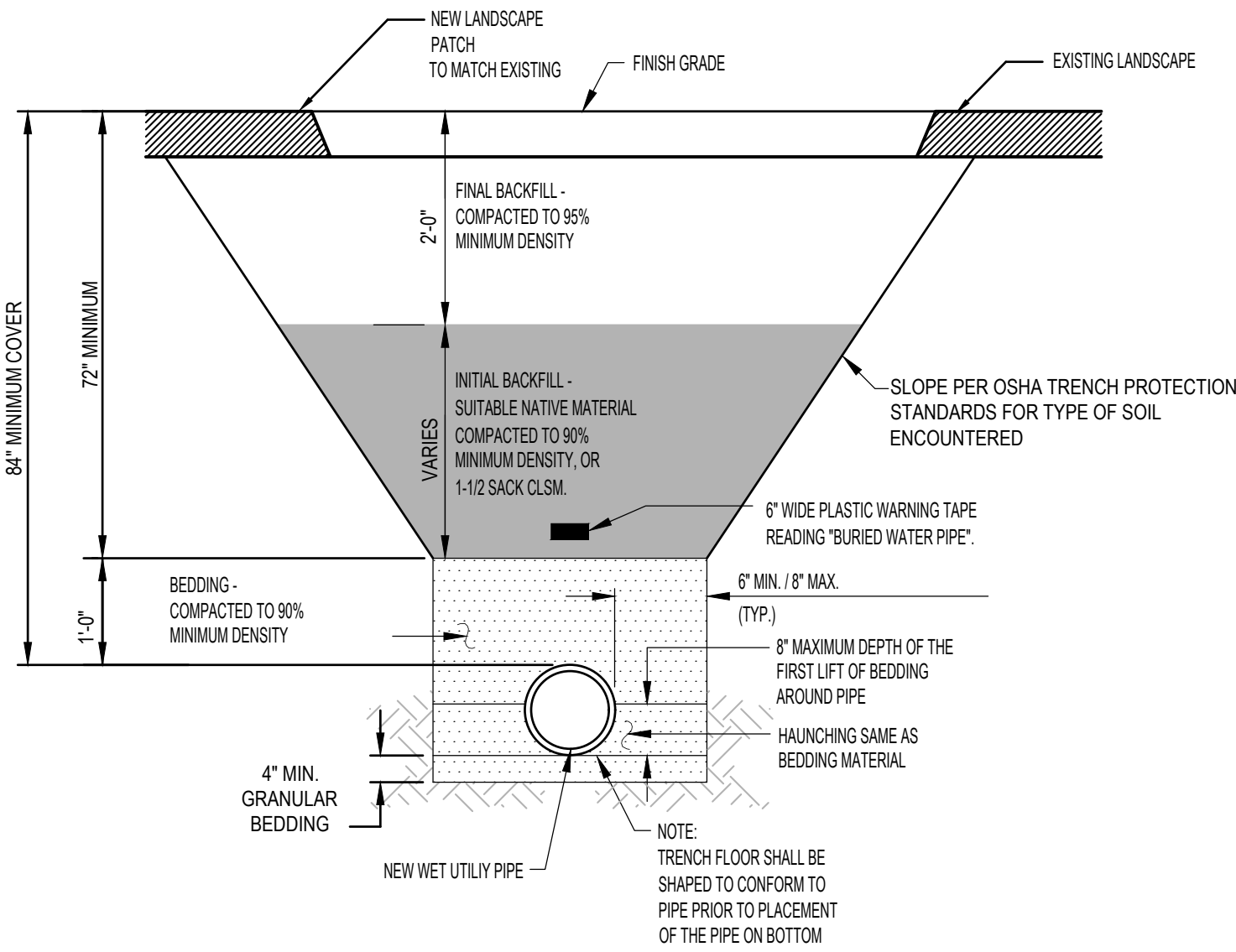
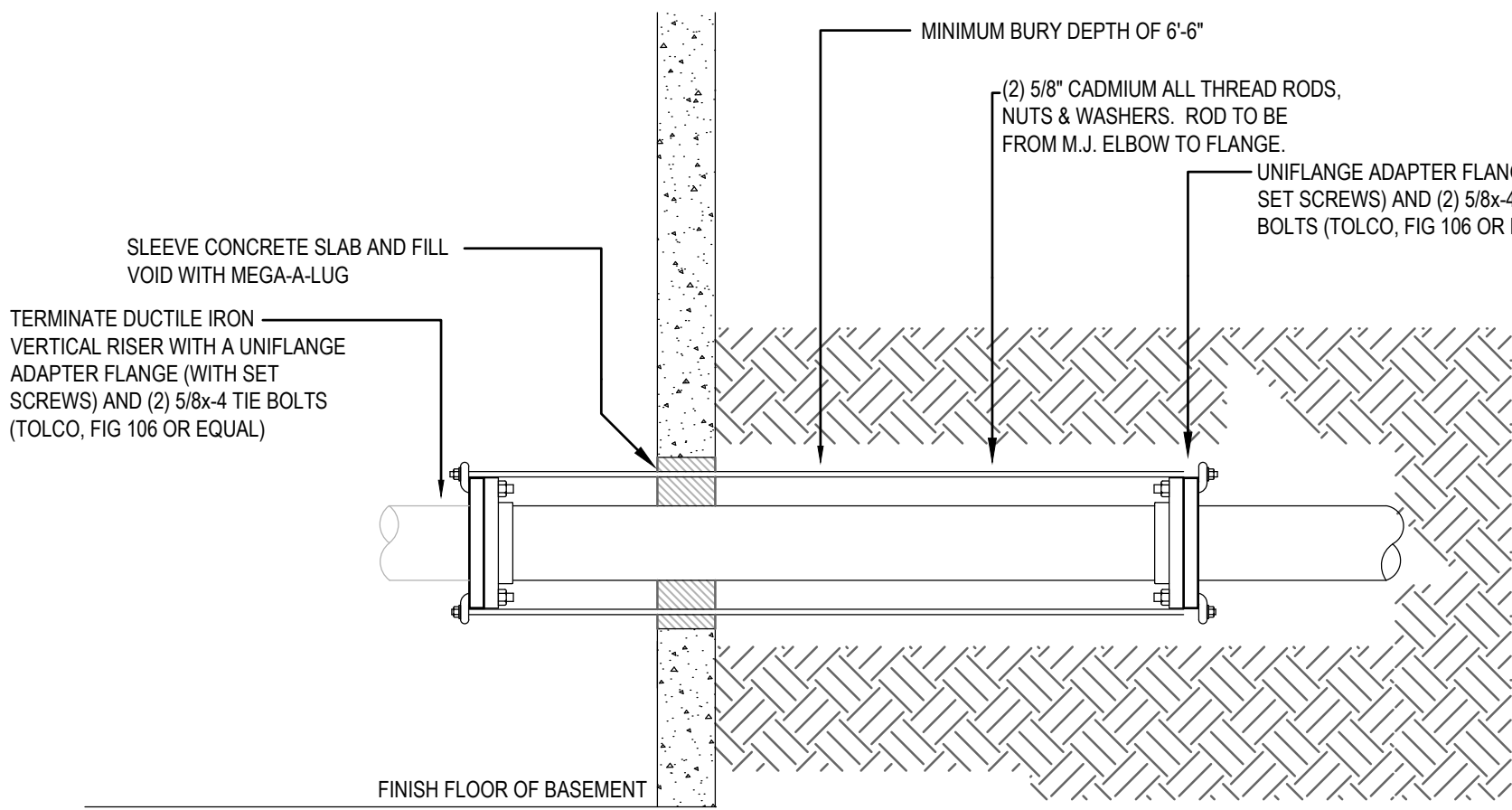


**A FIRE SPRINKLER REFERENCE SITE PLAN**  
FX1.0 1" = 30'-0"

CONTRACTOR IS TO UTILIZE THE LOWER BACK DOOR DURING ALL CONSTRUCTION WITHIN THE BUILDING.  
PUBLIC AREAS/HALLWAYS  
ALL PUBLIC AREAS MUST BE CLEARED OF DEBRIS AND STORAGE AT THE END OF EACH DAY DURING CONSTRUCTION. IF STAGING MATERIALS IN PUBLIC AREAS OR HALLWAYS, CONTRACTOR SHALL CLEARLY DELINEATE DAILY STORAGE ZONES WITH SAFETY CAUTION TAPE. AT NO TIME SHALL CONTRACTOR BLOCK EMERGENCY EGRESS PATHWAYS. CONTRACTOR SHALL COMPLETE HOUSEKEEPING AT THE END OF EACH DAY IN ALL PUBLIC AREAS. CONTRACTOR SHALL COMPLETE A FINAL CLEAN OF EACH ROOM.

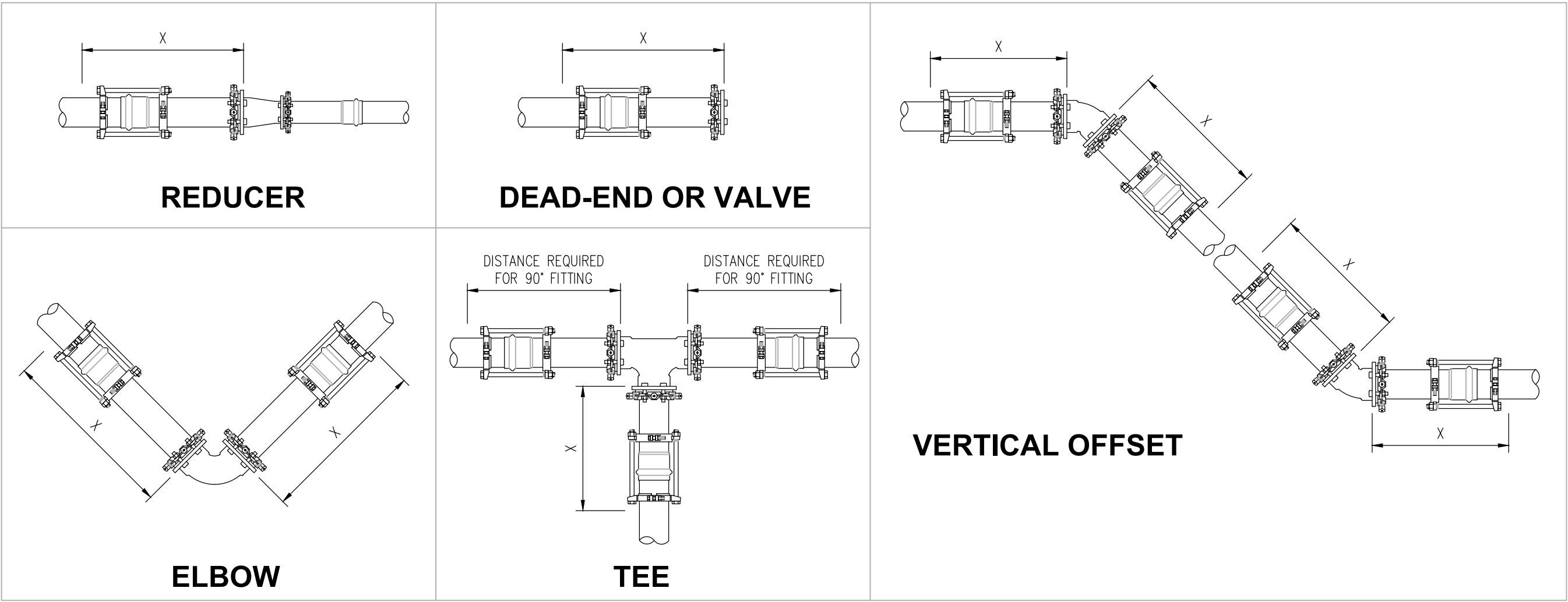


**2 NEW FIRE LINE SECTION**  
FX1.0 NO SCALE



NOTE:  
EXACT FOOTING CONFIGURATION UNDER CONCRETE WALL IS UNKNOWN.  
CONTRACTOR TO VERIFY THROUGH WALL OR TBAR

**3 NEW 4\"/>**



| PIPE SIZE | MINIMUM LINEAR FEET OF PIPE REQUIRED TO HAVE JOINT RESTRAINT (X) |           |             |              |        |         |                   |
|-----------|--|-----------|-------------|--------------|--------|---------|-------------------|
|           | 90° ELBOW  | 45° ELBOW | 22.5° ELBOW | 11.25° ELBOW | TEE    | REDUCER | DEAD-END OR VALVE |
| 4"        | 19'-0"   | 8'-0"     | 4'-0"       | 2'-0"        | 19'-0" | 16'-0"  | 19'-0"            |
| 6"        | 27'-0"   | 11'-0"    | 6'-0"       | 3'-0"        | 27'-0" | 22'-0"  | 19'-0"            |
| 8"        | 35'-0"   | 15'-0"    | 7'-0"       | 4'-0"        | 35'-0" | 29'-0"  | 35'-0"            |
| 12"       | 50'-0"   | 21'-0"    | 10'-0"      | 5'-0"        | 50'-0" | 41'-0"  | 60'-0"            |

- DESIGNED BASED UPON EBAA, MODEL 1100 MJ RESTRAINT AND MODEL 1700 JOIST RESTRAINT HARNESS
- TABLE BASED UPON WORST CASE TYPE 'CL' FINE GRAINED SOIL; TEST PRESSURES OF 250 PSI; MINIMUM 3.5'-FT BURY DEPTH; TYPE-3 TRENCH; AND A 1.5:1 SAFETY FACTOR.
- RESTRAINED JOINT SHALL BE USED ON ALL JOINTS FROM ANY MAIN TEE TO ANY FIRE HYDRANT.

**3 DUCTILE IRON JOINT RESTRAINT DETAIL WITH SPLIT SERRATED RESTRAINT HARNESS**  
FX1.0 NO SCALE

| UNDERGROUND LEGEND |  |
|--------------------|--|
| SYMBOL             | DESCRIPTION                                  |
|                    | OS&Y VALVE                                   |
|                    | RISER  |
|                    | NEW UNDERGROUND FIRE LINE                    |
|                    | EXISTING UNDERGROUND FIRE SERVICE/WATER MAIN |
|                    | TAPPING SLEEVE                               |
|                    | THRUST BLOCKING                              |
|                    | CUT IN FIELD                                 |
| CIF                | UNLESS OTHERWISE NOTED                       |
| UON                | UNLESS OTHERWISE NOTED                       |
| TOE                | THREAD ONE END                               |
| TBE                | THREAD BOTH ENDS                             |
| GOE                | GROOVE ONE END                               |
| GBE                | GROOVE BOTH ENDS                             |
| T&G                | THREAD & GROOVE                              |
| OS&Y               | OUTSIDE STEM & YOKE                          |
| W                  | WITH   |
| DN                 | DOWN   |
| FG                 | FINAL GRADE                                  |
| AFF                | ABOVE FINISHED FLOOR                         |

- GENERAL NOTES**
- FIRE PROTECTION SYSTEM SHALL BE DESIGNED, INSTALLED, TESTED, AND FLUSHED IN ACCORDANCE WITH:
    - INTERNATIONAL BUILDING CODE (IBC) - 2012 EDITION WITH LOCALLY ADOPTED MODIFICATIONS
    - NFPA 13 (STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS) - 2010 EDITION
    - NFPA 72 (NATIONAL FIRE ALARM AND SIGNALING CODE) - 2010 EDITION
    - NFPA 24 (STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES) - 2010 EDITION
  - NO INSTALLATION OF ANY PIPING OR EQUIPMENT IS TO BEGIN PRIOR TO APPROVAL OF PLANS BY THE AUTHORITY HAVING JURISDICTION AND THE OWNER'S REPRESENTATIVE.
  - ALL PAINTING OF FIRE PROTECTION PIPING AND RELATED COMPONENTS TO BE PERFORMED BY OTHER TRADE DIVISIONS.
  - ALL ELECTRICAL WIRING OF FIRE ALARM SYSTEM AND FIRE SPRINKLER ELECTRICAL COMPONENTS TO BE PROVIDED IN THIS CONTRACT. FIRE SPRINKLER SYSTEM SHALL BE SUPERVISED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND NFPA 72 (NATIONAL FIRE ALARM CODE).
  - IT IS THE OWNERS RESPONSIBILITY TO PROVIDE ADEQUATE HEAT TO PREVENT FREEZING THROUGHOUT WET PIPE SPRINKLER SYSTEM AREAS AND IN ENCLOSURES FOR DRY PIPE AND OTHER TYPES OF VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS.

ENGINEER

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| APPROVALS & COORDINATION   | WATER FLOW  | CONTRACT NAME  | CONTRACT WITH  | DESCRIPTION                              |
|--|---|--|--|--|
| PREPARED BY: JASON M. ANDERSON<br>DATE: 09/29/2019<br>CHECKED BY: J. ANDERSON<br>DATE: 09/29/2019<br>REVISIONS | STATIC PRESSURE: 63 PSI<br>RESIDUAL PRESSURE: 43 PSI<br>GPM FLOWING: 698 GPM<br>TEST TAKEN AT: SENDER ST<br>DATE: 09/29/2019<br>SYSTEM TYPE: NEW WET SYSTEM | MAKOSHIKA STATE PARK BASEMENT FIRE ALARM SPRINKLERS<br>1301 SNYDER ST.<br>GLENDALE, MT 59330 | MONTANA FISH WILDLIFE & PARKS DESIGN & CONSTRUCTION<br>1522 NINTH AVE.<br>HELENA, MT 59620 | GENERAL NOTES, SITE, UNDERGROUND DETAILS |

SCALE: 1/8" = 1'-0"

DRAWN BY: B. HOFFMAN

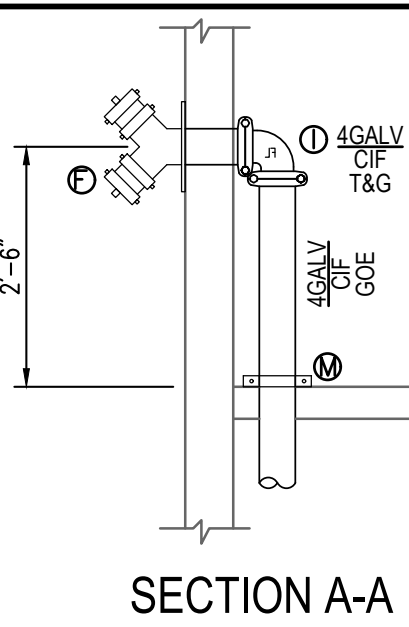
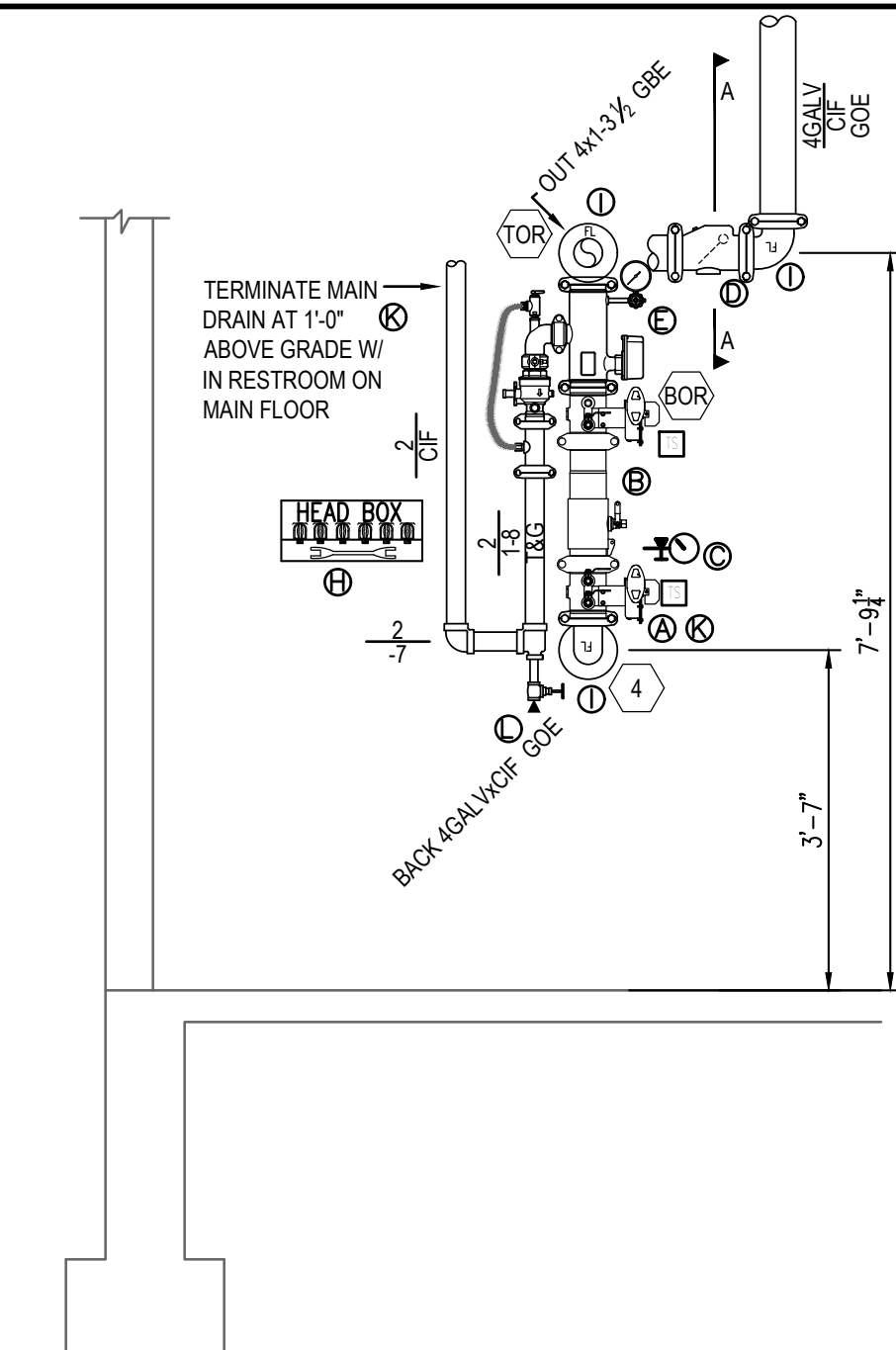
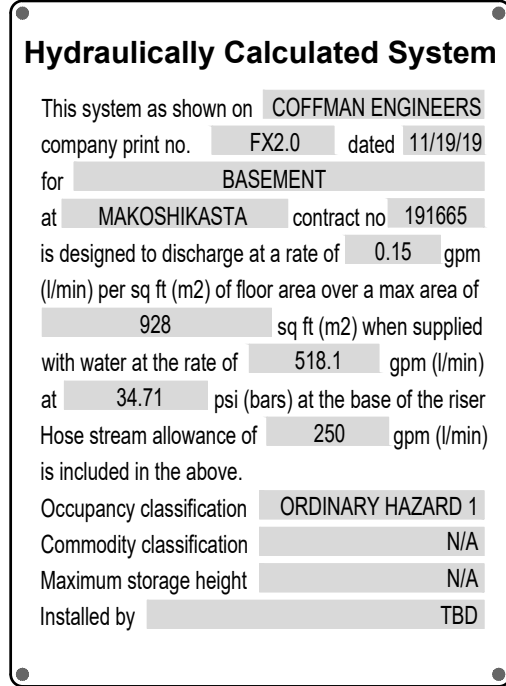
CHECKED BY: J. ANDERSON

DATE: 01/09/2020

CONTRACT NO.: 191665

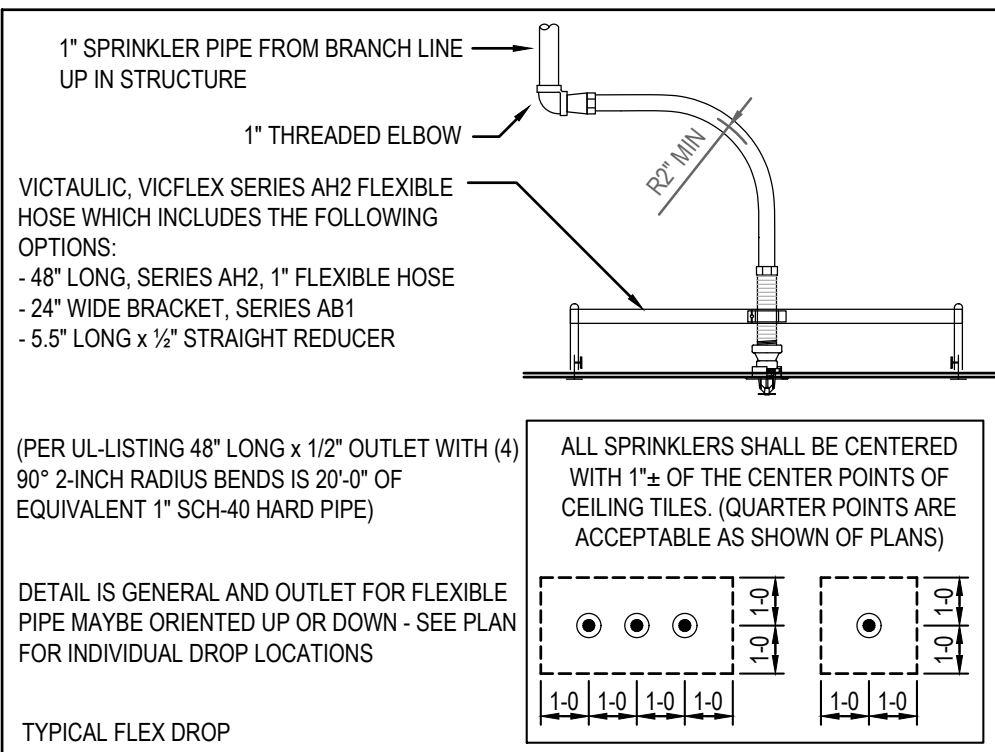
SHEET NO.: FX1.0







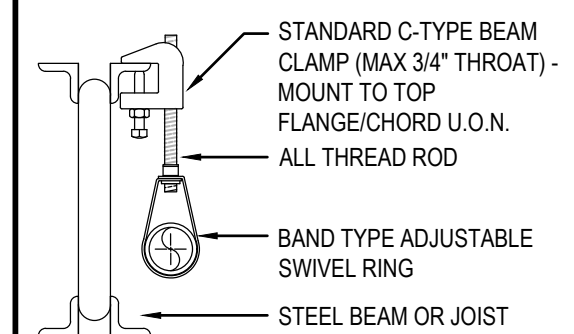


## RISER LEGEND ⊗

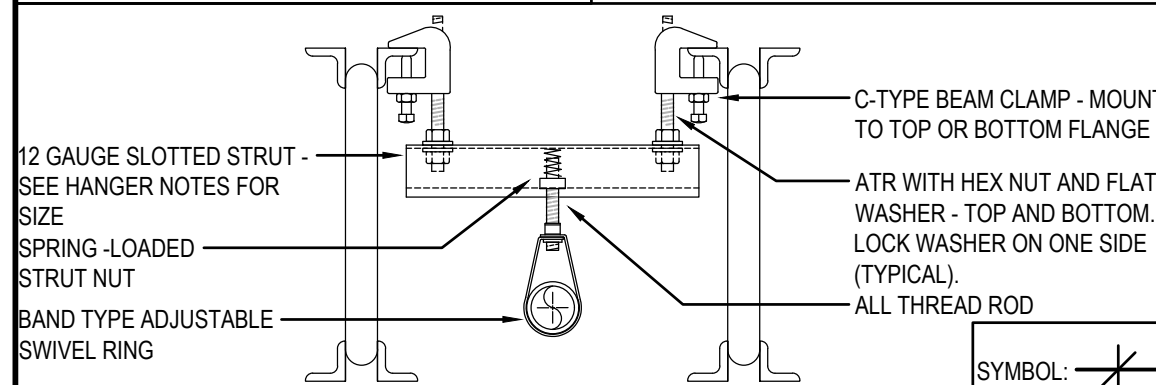
- B. 4" GROOVED FLANGE - VICTAULIC JIG #44
- C. 4" DOUBLE CHECK VALVE ASSEMBLY WITH GROOVED BUTTERFLY VALVES AND BUILT-IN TAMPER SWITCHES - AMES, MODEL "COLT" C300B
- D. 1/2x1/4 GALV HEX BUSHING, 1/4x3 GALV NIPPLE, 1/2" 3" WAY VALVE, 1/4" WATER GAUGE, 1/4" PLUG, "GAUGE KIT"
- E. 4" GROOVED CHECK VALVE - VICTAULIC, MODEL 717
- F. 4" RISER MANIFOLD WITH FLOW SWITCH, TEST AND DRAIN VALVE, PRESSURE GAUGE AND PRESSURE RELIEF VALVE
- G. "TYCO-FIRE, MODEL RM-1 WITH MAIN DRAIN AND TEST ORIFICE.  
ORDER WITH OPTION #175 "PRESSURE RELIEF VALVE"  
NO ADDITIONAL SIGNAGE TO BE PROVIDED - "INSPECTORS TEST" AND "MAIN DRAIN" WORDING CAST IN BODY
- F. 4 x 2-1/2 x 2-1/2" EXPOSED "AUTO SPRK" FIRE DEPARTMENT CONNECTION BRASS FINISH - POTTER ROEMER, MODEL 5751 WHICH INCLUDES THE FOLLOWING:  
- EXPOSED INLET CONNECTION WITH NATIONAL STANDARD HOSE THREAD SWIVELS AND DOUBLE CLAMPERS  
- (2) 1/2" PLUGS AND CHAIN  
- ROUND 9/32"-OD. BRASS WALL PLATE WITH A 4" GALV SOLID WALL PLATE  
- SECURE TO INTERIOR WALL WITH A 4" GALV SOLID WALL PLATE
- G. 10" EXTERIOR ELECTRIC BELT - POTTER MB42410 W/ WEATHERPROOF BACKBOX
- H. SPARE HEAVY CABINET WITH MINIMUM AS REQUIRED PER NFPA #31 (EXCEPT FOR DRY PREVENTS - 6"HEAVY MODEL) WITH WRENCHES
- J. 4" GROOVED BELT - SHORT TAKEOUT
- K. 4" GROOVED TEE - SHORT TAKEOUT
- K. TERMINATE MAIN DRAIN THROUGH WALL WITH A 2" GMI 45" ELL AND 2GLVx2 TEE. SECURE TO EACH SIDE OF WALL WITH (2) "S" WALL GALV WALL PLATES.  
NIPPLE, 3/4" SPH PLUG WITH 1/2" ORANGE ARROW FROM BUILDING
- L. 1x4 NIPPLE, 1" BALL VALVE, 1" PLUG WITH "AUXILIARY DRAIN" SIGN AND CHAIN
- M. 4" RISER CLAMP



| SPRINKLER HEADS |        |      |       |        |        |          |          |         |      |       |   |          |
|-----------------|--------|------|-------|--------|--------|----------|----------|---------|------|-------|---|----------|
| MANUFACTURER    | MODEL  | TYPE | SIN   | FINISH | THREAD | K-FACTOR | CANOPY   | ESCUTCH | TEMP | WRNCH | SYMBOL  | QUANTITY |
| TYCO            | TY-FRB | PEND | TY323 | WHITE  | 1/2"   | 5.6      | REC'D    | STY15   | 200° | W7    |  | 7        |
| TYCO            | TY-FRB | UP   | TY313 | BRASS  | 1/2"   | 5.6      | ON-LINE  | -       | 200° | W6    |  | 32       |
| TYCO            | TY-FRB | UP   | TY313 | BRASS  | 1/2"   | 5.6      | ON-SPRIG | -       | 200° | W6    |  | 1        |
| TYCO            | TY-FRB | PEND | TY323 | WHITE  | 1/2"   | 5.6      | EXTENDED | STY 401 | 200° | -     |  | 1        |
|                 |        |      |       |        |        |          |          |         |      |       | TOTAL   | 42       |



PROVIDE: 3/4" THROAT C-TYPE 3/8" BEAM CLAMP,  
3/8xCIF (12" AVERAGE LENGTH FOR LISTING) ATR & PIPE  
RING.



PROVIDE: (2) 3/4" THROAT C-TYPE 3/8" BEAM CLAMPS & 3/8x6 ATR W/ HEX NUTS & FLAT WASHERS TOP AND BOTTOM & LOCK WASHER ON ON SIDE, 1 5/8 x 1 5/8 x 5-0 LONG 12-GAUGE SLOTTED STRUT TRAPEZE, 3/8" STRUT NUT W/ 3/8xCIF (23" AVERAGE LENGTH FOR LISTING) ATR AND PIPE RING.

## HANGER NOTES

\*ALL-THREAD-ROD SHALL BE CADMIUM-ZINC PLATED OR EQUAL.  
 \*SEND ATR IN FULL 10' LENGTHS (I.E. NOT CUT AT FABRICATOR).  
 \*SEND STRUT IN FULL 20' LENGTHS (I.E. NOT CUT AT FABRICATOR).

## GENERAL NOTES

1. ALL CEILING HEIGHTS ARE OPEN TO STRUCTURE U.O.N.
2. ALL GROOVED COUPLINGS SHALL BE ZERO FLEX/RIGID U.O.N AND/OR REQUIRED BY CODE.
3. ALL HARD PIPE DROPS 1x3-0" T.O.E. U.O.N.
4. ALL DOWNS TO FLEX PIPE 1x2-0" U.O.N. TERMINATE W/ 1" THREADED EL U.O.N.
5. ALL SPRINGS 1/8" O.U.N. UPRIGHT 6" INCHES BELOW DECK
6. SPRINKLER HEADS ARE NOT COVERED. ACTUAL LOCATIONS OF SPRINKLER HEADS WITHIN CEILING MAY VARY DUE TO CONSTRUCTION CONDITIONS.
7. ALL PENDENT SPRINKLERS IN SUSPENDED ACOUSTICAL TILE CEILINGS SHALL BE INSTALLED ON A 48" LONG FLEX DROP. SEE DETAIL 1FX2-0.
8. PROVIDE SPLIT CHROME WALL PLATES AT ALL EXPOSED WALL PENETRATIONS IN FINISHED ROOMS. TOTAL COUNT FOR SHEET: (1) 1INCH; (7) 1-1/4 INCH; (2) 2-1/2 INCH
9. SPRINKLER ARE CLUSED 80' HIGH. HAZARD OCCUPANCY (0.10 GPM/SQ FT OVER REMOTE AREA - 100 GPM HOSE) PER NFPA 13 UNLESS OTHERWISE NOTED WITH SYMBOLS BELOW. SEE REMOTE AREA NOTES FOR REMOTE AREA MODIFICATIONS AS APPLICABLE.
- (OH1) ORDINARY HAZARD GROUP 1 - 0.15 GPM/SQ FT OVER REMOTE AREA - 250 GPM HOSE
- (OH2) ORDINARY HAZARD GROUP 2 - 0.20 GPM/SQ FT OVER REMOTE AREA - 250 GPM HOSE

PLAN KEY NOTES 

1. SPRINKLER UNDER DUCT GREATER THAN 4'-0"

## FIRE SPRINKLER GENERAL NOTES

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  - INTERNATIONAL BUILDING CODE (IBC) - 2012 EDITION WITH LOCALLY ADOPTED MODIFICATIONS
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3. ALL PAINTING OF FIRE PROTECTION PIPING AND RELATED COMPONENTS TO BE PERFORMED BY OTHER TRADE DIVISIONS.
4. ALL ELECTRICAL WIRING OF FIRE ALARM SYSTEM AND FIRE SPRINKLER ELECTRICAL COMPONENTS TO BE PROVIDED IN THIS CONTRACT. FIRE SPRINKLER SYSTEM SHALL BE SUPERVISED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND NFPA 72 (NATIONAL FIRE ALARM CODE).
5. IT IS THE OWNERS RESPONSIBILITY TO PROVIDE ADEQUATE HEAT TO PREVENT FREEZING THROUGHOUT WET PIPE SPRINKLER SYSTEM AREAS AND IN ENCLOSURES FOR DRY PIPE AND OTHER TYPES OF VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS.

## FIRE SPRINKLER LEGEND

| SYMBOL | DESCRIPTION   |
|--------|---|
| —      | ALTERNATE SPRINKLER TEMPERATURES MAY BE NOTED NEXT TO SYMBOL (I.E. INT = INTERMEDIATE; HIGH = HIGH TEMPERATURE) |
| ⊙      | STANDARD SPRAY PENDENT SPRINKLER ON - DROP  |
| ⊙      | STANDARD SPRAY PENDENT SPRINKLER ON - DROP  |
| ⊙      | STANDARD SPRAY UPRIGHT SPRINKLER ON - LINE  |
| ⊙      | STANDARD SPRAY UPRIGHT SPRINKLER ON - SPRIG   |
| FS     | FLOW SWITCH   |
| TS     | TAMPER SWITCH   |
| ⊠      | CHECK VALVE   |
| ⊠ OR ⊠ | BUTTERFLY VALVE (GROOVED OR SCREWED)  |
| ⊠      | GLOBE VALVE   |
| HT     | HORN/STROBE ASSEMBLY  |
| ↗      | FIRE DEPARTMENT CONNECTION  |
| X-X    | PIPE CENTERLINE FROM FINISHED FLOOR   |
| ⊙      | HYDRAULIC NODE POINT  |
| ⊙      | CEILING HEIGHT  |
| ⊙      | RISER   |
| ·      | DISTANCE PIPE FROM DECK   |
| —      | FLANGE  |
| ⊙      | GROOVED ELBOW UP  |
| ⊙      | GROOVED ELBOW DOWN  |
| —      | GROOVED COUPLING  |
| ⊙      | SCREWED ELBOW DOWN  |
| ⊙      | SCREWED ELBOW UP  |
| —      | HANGER SYMBOL #1  |
| —      | HANGER SYMBOL #2  |
| HEADS  | HEAD BOX  |
| ⊙      | TAPPING VALVE   |
| ⊙      | THRUST BLOCKING/PLUG  |
| —      | NEW SPRINKLER PIPE  |
| AFB    | ABOVE FINISHED FLOOR  |
| ATR    | ALL THREAD ROD  |
| A.S.   | AUTOMATIC SPRINKLER   |
| CIF    | CUT IN FIELD  |
| DN     | DOWN  |
| FDC    | FIRE DEPARTMENT CONNECTION  |
| FG     | FINISHED GRADE  |
| GALV   | GALVANIZED  |
| GBE    | GROOVE BOTH ENDS  |
| GOE    | GROOVE ONE END  |
| GMI    | GALVANIZED MALLEABLE IRON   |
| OS&Y   | OUTSIDE STEM & YOKE   |
| RN     | RISER NIPPLE  |
| TBE    | THREAD BOTH ENDS  |
| TOE    | THREAD ONE END  |
| T&G    | THREAD AND GROOVE   |
| UNON   | UNLESS OTHERWISE NOTED  |
| W/     | WITH  |

|                                |  |
|--------------------------------|--|
| SEISMIC CLEARANCE REQUIREMENTS |  |
|--------------------------------|--|

PROVIDE CLEARANCE AT ALL PIPING EXTENDING THROUGH WALLS, FLOORS, FOUNDATIONS  
NO CLEARANCE REQUIRED AT GYPSUM BOARD OR EQUALLY FRANGIBLE CONSTRUCTION  
THAT IS NOT REQUIRED TO HAVE A FIRE RESISTANCE RATING.

| NOMINAL PIPE SIZE |     | CORE DRILL HOLE OR PIPE SLEEVE SIZE |     | AT CONTRACTORS OPTION FLEXIBLE COUPLINGS MAY BE INSTALLED WITHIN 12" OF THE WALL SURFACE ON EACH SIDE, OR WITHIN 12" ABOVE FLOOR AND 24" BELOW FLOOR. THE CLEARANCES NOTED ARE NOT REQUIRED. |  |
|-------------------|-----|-------------------------------------|-----|--|--|
| INCH              | MM  | INCH                                | MM  |  |  |
| 1/2               | 25  | 3                                   | 80  |  |  |
| 1-1/4             | 32  | 4                                   | 100 |  |  |
| 1-1/2             | 40  | 4                                   | 100 |  |  |
| 2                 | 50  | 4                                   | 100 |  |  |
| 2-1/2             | 65  | 6                                   | 150 |  |  |
| 3                 | 80  | 6                                   | 150 |  |  |
| 4                 | 100 | 8                                   | 200 |  |  |
| 6                 | 150 | 10                                  | 250 |  |  |

FIRE CAULK HOLE AND PROVIDE SPLIT CHROME PLATE AT ALL EXPOSED WALL LOCATIONS.

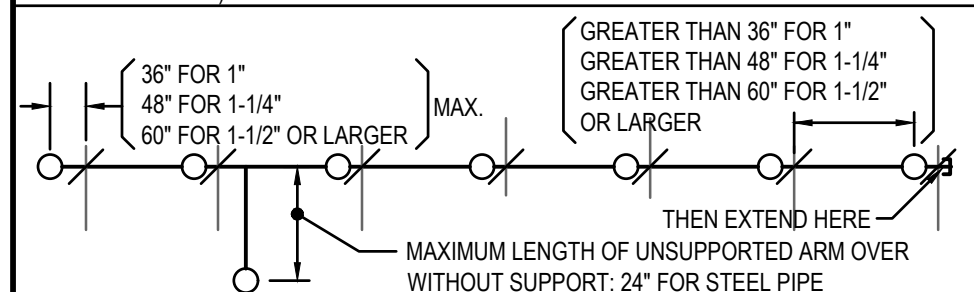
(NOTES THAT AT NON-RATED FRANGIBLE GYPSUM BOARD WALLS NO CLEARANCE IS REQUIRED)

## HANGER SPACING REQUIREMENTS

| MAXIMUM DISTANCE BETWEEN HANGERS (FT-IN.) - N.F.P.A. #13 |      |      |        |        |      |        |      |      |      |      |
|--|------|------|--------|--------|------|--------|------|------|------|------|
| NOMINAL PIPE SIZE  | 3/4" | 1"   | 1-1/4" | 1-1/2" | 2"   | 2-1/2" | 3"   | 4"   | 6"   | 8"   |
| STEEL PIPE   | N/A  | 12-0 | 12-0   | 15-0   | 15-0 | 15-0   | 15-0 | 15-0 | 15-0 | 15-0 |

NOTE:  
TYPICAL HANGER SYMBOLS AS SHOWN ON PIPING PLAN MAY NOT REFLECT ACTUAL FIELD  
INSTALLATION. FINAL HANGER INSTALLATION SHALL BE IN ACCORDANCE WITH THE  
REQUIREMENTS OF N.F.P.A. #13.

DISTANCE FROM SPRINKLER TO HANGER - N.F.P.A. #13 - MAX PRESSURES  $\leq 100$  PSI (ALL SPRINKLER TYPES)



## SEISMIC BRACING REQUIREMENTS

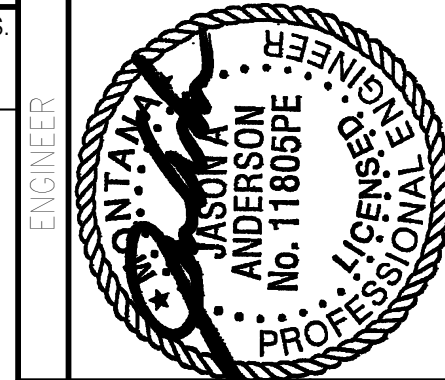
EARTHQUAKE BRACING SHALL CONFORM WITH N.F.P.A. #13 (2010 EDITION), I.B.C. (2012 EDITION), NEHRP, AND ASCE/SEI 7-05 (2007 EDITION) CRITERIA.

| DESCRIPTION OF SITE CONDITIONS  |                  |
|---|------------------|
| MAPPED SPECTRAL ACCELERATION FOR SHORT PERIODS  | $S_{s1} = 0.066$ |
| MAPPED SPECTRAL ACCELERATION FOR A 1-SECOND PERIOD  | $S_{s1} = 0.028$ |
| SITE CLASS  | D                |
| SEISMIC OCCUPANCY CATEGORY OF BUILDING  | II               |
| MAXIMUM SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS   | $S_{s1} = 0.07$  |
| MAXIMUM SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIODS  | $S_{s1} = 0.045$ |
| SEISMIC DESIGN CATEGORY BASED ON $S_{s1}$   | A                |
| SEISMIC DESIGN CATEGORY BASED ON $S_{s2}$   | A                |
| <p>SINCE THE WORST CASE SEISMIC DESIGN CATEGORY FOR EITHER SDS OR SD1 IS 'B' OR LESS THEN THE SPRINKLER SYSTEM IS EXEMPT FROM SEISMIC BRACING PER ASCE 7-05 PARAGRAPH 13.1.4.</p> |                  |

| MATERIALS LIST (BY TYPE OF JOINTS TO BE WELDED) |             | FITTINGS AND JOINTS   |  |
|---|-------------|---|--|
| PIPE SIZE                                       | PIPE        |   |  |
| 1"  | SCHEDULE 40 | CLASS 300 DUCTILE IRON (HEAVY DUTY FITTINGS) (30 PSI RATED)   |  |
| 1 1/2" TO 4"                                    | SCHEDULE 10 | WELDED JOINTS WITH SLOTTED BOLTS AND NUTS OF DUCTILE IRON (GROOVED FITTINGS) (30 PSI RATED) (BROAD TANG) (1/4" E & F) |  |
| 1" TO 2"  | SCHEDULE 40 | BLACK CLASS 150 CAST IRON (HEAVY DUTY FITTINGS) (150 PSI RATED)   |  |

**COFFMAN**  
**ENGINEERS**

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Bozeman, MT 59715  
**ph 406.562.1936**



| WATER FLOW         |            |                           | APPROVALS & COORDINATION |         |              |
|--------------------|------------|---------------------------|--------------------------|---------|--------------|
| STATIC PRESSURE:   | 53 PSI     | RESIDUALITY               | MECHANICAL               | CONTROL | PIPING       |
| RESIDUAL PRESSURE: | 43 PSI     | STATE OF VERMONT          |                          |         | 700 841-2533 |
| PM FLOWING:        | 688 GPM    | BUILDING CODE DEPT.       |                          |         |              |
| TEST TAKEN AT:     | SWAYER ST. |                           |                          |         |              |
| TEST TAKEN BY:     | GLENNIE PD |                           |                          |         |              |
| DATE:              | 09/25/2018 |                           |                          |         |              |
| SYSTEM TYPE        |            | REVISIONS                 |                          |         |              |
| NO.                | DATE       | DESCRIPTION               |                          |         |              |
| 1                  | 12-18-2019 | REVISED PER P.W. COMMENTS |                          |         |              |
| NEW MET SYSTEM     |            |                           |                          |         |              |

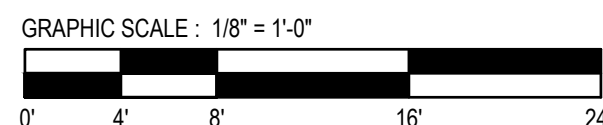
|                |  |
|----------------|--|
| CONTRACT NAME: | MAKOSHIGA STATE PARK BASEMENT FIRE<br>ALARM SPRINKLERS<br>1301 SNYDER ST.,<br>GLENVIEW, MT 59530 |
| CONTRACT WITH: | MONTANA FISH WILDLIFE & PARKS<br>DESIGN & CONSTRUCTION<br>1522 NINTH AVE.<br>HELENA, MT 59620    |
| DESCRIPTION:   | BASEMENT - FIRE SPRINKLER PLAN   |

SCALE: 1/8"=1'-0"

|             |             |
|-------------|-------------|
| DRAWN BY:   | B. HOFFMAN  |
| CHECKED BY: | J. ANDERSON |
| DATE:       | 01/09/2020  |

|               |        |
|---------------|--------|
| CONTRACT NO.: |        |
| COFFMAN #:    | 191665 |
| SHEET NO.:    |        |

## FX2.0





FIRE ALARM NOTES

1. FIRE ALARM SYSTEM SHALL COMPLY WITH:  
A) NFPA 70 (NATIONAL ELECTRIC CODE), 2011  
B) NFPA 72 (FIRE ALARM CODE), 2013  
C) NFPA 90A, 2009  
D) IBC, 2012  
E) ADA/ABA, 2004

2. THE FIRE ALARM SYSTEM SHOWN IS BASED ON HOCHIKI PRODUCTS AND REPRESENTS COMPLETE SHOP DRAWINGS FOR INSTALLATION. SUBSTITUTIONS ARE PERMITTED.

3. COORDINATE THE EXACT DEVICE LOCATIONS WITH ELECTRICAL AND MECHANICAL SYSTEM EQUIPMENT AND BUILDING ARCHITECTURAL FEATURES. INSTALLING CONTRACTOR SHALL CONSULT/CONFIRM ANY NECESSARY DEVIATION OF DEVICE BOX PLACEMENT OR CONDUIT/CIRCUIT ROUTING WITH THE DESIGNER OF RECORD PRIOR TO IMPLEMENTING CHANGES IN THE FIELD.

4. ALL FIRE ALARM CONDUIT SIZES SHALL BE 3/4" MINIMUM UNLESS OTHERWISE NOTED. ALL CONDUIT SHALL BE CONCEALED IN WALL AND CEILING SPACES WHERE FEASIBLE. IN FINISHED AREAS WITHOUT DROP CEILING, INSTALL SURFACE MOUNTED CONDUIT AS NECESSARY. OWNER TO PROVIDE PAINT TO MATCH FOR SURFACE MOUNTED CONDUIT.

5. MINIMUM CIRCUIT PERFORMANCE REQUIREMENTS:  
IDC - INITIATING DEVICE CIRCUIT SHALL BE CLASS B.  
NAC - NOTIFICATION APPLICATION CIRCUIT SHALL BE CLASS B.  
SLC - SIGNALING LINE CIRCUIT SHALL BE CLASS B.
6. "T" TAPPING OF FIRE ALARM NAC CIRCUITS IS PROHIBITED.

7. FIRE ALARM CONTRACTOR SHALL PROVIDE TWO EACH OF DETECTORS, MODULES, RELAYS, AND NOTIFICATION APPLIANCES AS SPARE DEVICES TO THE OWNER. \*EXCEPTION: OSID AND PANEL COMPONENTS\*

8. PAINT FIRE ALARM JUNCTION BOX COVERS RED. BOTH SIDES OF COVER PLATES SHALL BE PAINTED RED.

9. FIRE ALARM EQUIPMENT CABINETS SHALL HAVE TAGS PERMANENTLY AFFIXED TO THE FACE OF THE ENCLOSURE. LABEL 120VAC CIRCUIT NUMBER SERVING FIRE PANEL. LABEL EACH DEVICE WITH ITS ADDRESS OR NAC DESIGNATOR USING SELF-ADHESIVE LASER PRINTED COMMERCIALY AVAILABLE ID TAGS. MODULES AND SWITCH LABELS SHALL ALSO INCLUDE ASSOCIATED FUNCTION.

10. DO NOT MOUNT SMOKE DETECTORS WITHIN 36" OF AN AIR DIFFUSER OR CEILING FAN.

11. PER 2013 NFPA 72, PARAGRAPHS 10.4.4 & A10.15, SMOKE DETECTORS SHALL BE INSTALLED AT FIRE CONTROL EQUIPMENT IN ACCORDANCE WITH 17.7.3.2.1

12. ALL FIRE ALARM SYSTEM CONTROL RELAYS SHALL BE LOCATED WITHIN 36" OF THE EQUIPMENT OR CIRCUIT THEY CONTROL.

- CONTRACTOR IS TO UTILIZE THE LOWER BACK DOOR DURING ALL CONSTRUCTION WITHIN THE BUILDING.

- PUBLIC AREAS/HALLWAYS

- ALL PUBLIC AREAS MUST BE CLEARED OF DEBRIS AND STORAGE AT THE END OF EACH DAY DURING CONSTRUCTION. IF STAGING MATERIALS IN PUBLIC AREAS OR HALLWAYS, CONTRACTOR SHALL CLEARLY DELINEATE DAILY STORAGE ZONES WITH SAFETY CAUTION TAPE. AT NO TIME SHALL CONTRACTOR BLOCK EMERGENCY EGRESS PATHWAYS. CONTRACTOR SHALL COMPLETE HOUSEKEEPING AT THE END OF EACH DAY IN ALL PUBLIC AREAS. CONTRACTOR SHALL COMPLETE A FINAL CLEAN OF EACH ROOM.

MATERIAL KEYNOTES

- FX3

2

FIRE ALARM COMMUNICATOR PANEL
- 8

8

ADDRESSABLE SMOKE DETECTOR
- 8

8

JUNCTION BOX
- 8

8

WATERFLOW SWITCH
- 8

8

TAMPER SWITCH
- 8

8

MANUAL FIRE ALARM / PULL STATION

GENERAL NOTES

1. FIRE ALARM DESIGN TO EXCLUSIVELY MONITOR WATERFLOW, SUPERVISORY, AND GATE VALE TAMPER CONDITIONS.

PLAN KEY NOTES

1. NEW HOCHIKI 4555 - 4 ZONE FIRE PANEL, W/ BUILT IN PRIMARY GSM CELLULAR COMMUNICATOR OR EQUAL
2. FIELD ROUTE 120 V CONDUIT TO NEW FIRE ALARM PANEL LOCATION AND ELECTRIC BELL
3. 120 V ELECTRIC ALARM BELL
4. SYSTEM SENSOR SMOKE DETECTOR MODEL 4W-B (4-WIRE, 23 Ma @ 24V) OR EQUAL

ELECTRICAL NOTES

1. THE CONTRACTOR SHALL COMPLY WITH THE CONSTRUCTION PRACTICES AND REQUIREMENTS OF THE REFERENCED EDITION OF THE NATIONAL ELECTRIC CODE (2011 NFPA 70), CURRENT NATIONAL ELECTRICAL SAFETY CODE, AND INSTRUCTIONS OF MANUFACTURERS OF EQUIPMENT AND MATERIALS SUPPLIED FOR THE PROJECT.

2. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL JUNCTION AND PULL BOXES REQUIRED FOR THE INSTALLATION OF ELECTRICAL DEVICES AND EQUIPMENT. WHETHER OR NOT SPECIFICALLY INDICATED ON THE PLANS, SIZING OF THESE BOXES SHALL BE PER THE NATIONAL ELECTRICAL CODE.

3. ALL PENETRATIONS THROUGH FIRE BARRIERS SHALL BE FIRE STOPPED TO MAINTAIN THE INTEGRITY OF THE FIRE BARRIER. FIRE STOPPING MATERIAL SHALL BE U.L. LISTED.

4. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE OWNER PRIOR TO MAKING ANY PENETRATIONS THROUGH STRUCTURAL MEMBERS.

5. SHOULD PROJECT CONDITIONS REQUIRE REARRANGEMENT OF WORK, THE CONTRACTOR SHALL MARK SUCH CHANGES ON THE AS-BUILT DRAWINGS. IF THESE CHANGES REQUIRE ALTERNATE METHODS TO THOSE SPECIFIED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING THE PROPOSED ALTERNATE METHODS. THE CONTRACTOR SHALL NOT PROCEED UNTIL APPROVAL IS OBTAINED. REARRANGEMENT OF WORK FOR THE PURPOSE OF COORDINATION SHALL NOT BE CONSIDERED AN ITEM FOR EXTRA COST.

6. REPAIR ANY DAMAGE TO EXISTING CONSTRUCTION RESULTING FROM THE INSTALLATION OF ELECTRICAL ITEMS. THE AREAS REPAIRED SHALL MATCH THE ADJACENT SURFACES IN TEXTURE AND COLOR.
7. ALL EXPOSED AND CONCEALED CONDUITS SHALL BE EMT (ELECTRICAL METALLIC TUBING). ALL UNDERGROUND CONDUIT SHALL BE PVC CONDUIT SCHEDULE 40, UNLESS NOTED OTHERWISE. USE FLEXIBLE METAL CONDUIT AND SEAL-TIGHT WHERE APPLICABLE.

8. ALL EQUIPMENT SHALL BE CAPABLE OF FITTING IN THE SPACES LOCATED WHILE MEETING THE MANUFACTURER'S RECOMMENDED ACCESS REQUIREMENTS. REVIEW ALL PLACES WHERE EQUIPMENT IS TO BE INSTALLED PRIOR TO ORDERING OF EQUIPMENT AND NOTIFY THE CONTRACTING OFFICER OF ANY INADEQUATE CLEARANCES OR CONDITIONS THAT WILL PREVENT THE PROPER INSTALLATION, MAINTENANCE, AND OPERATIONS OF THE EQUIPMENT.

9. PROVIDE ACCESS PANELS TO ALL CONCEALED TRANSFORMERS, DEVICES, JUNCTION BOXES AND EQUIPMENT. COORDINATE THE LOCATION OF ACCESS PANELS TO INSURE THAT THE EQUIPMENT CAN BE MAINTAINED ADEQUATELY.

11. ALL 120VAC CIRCUIT BREAKERS SERVING FIRE ALARM EQUIPMENT SHALL BE RED AND LOCKABLE. PROVIDE BREAKER LOCK ON DEVICE(S).

12. ANY PENETRATION OF THE BUILDING VAPOR BARRIER SYSTEM SHALL BE APPROPRIATELY SEALED TO RETAIN THE INTEGRITY OF THE SYSTEM. THIS INCLUDES BUT IS NOT LIMITED TO CONDUITS AND BACKS OF ELECTRICAL BOXES.

13. ALL EQUIPMENT AND CABLE SHALL BE PROPERLY RATED FOR THE CONDITIONS IN WHICH IT IS INSTALLED.

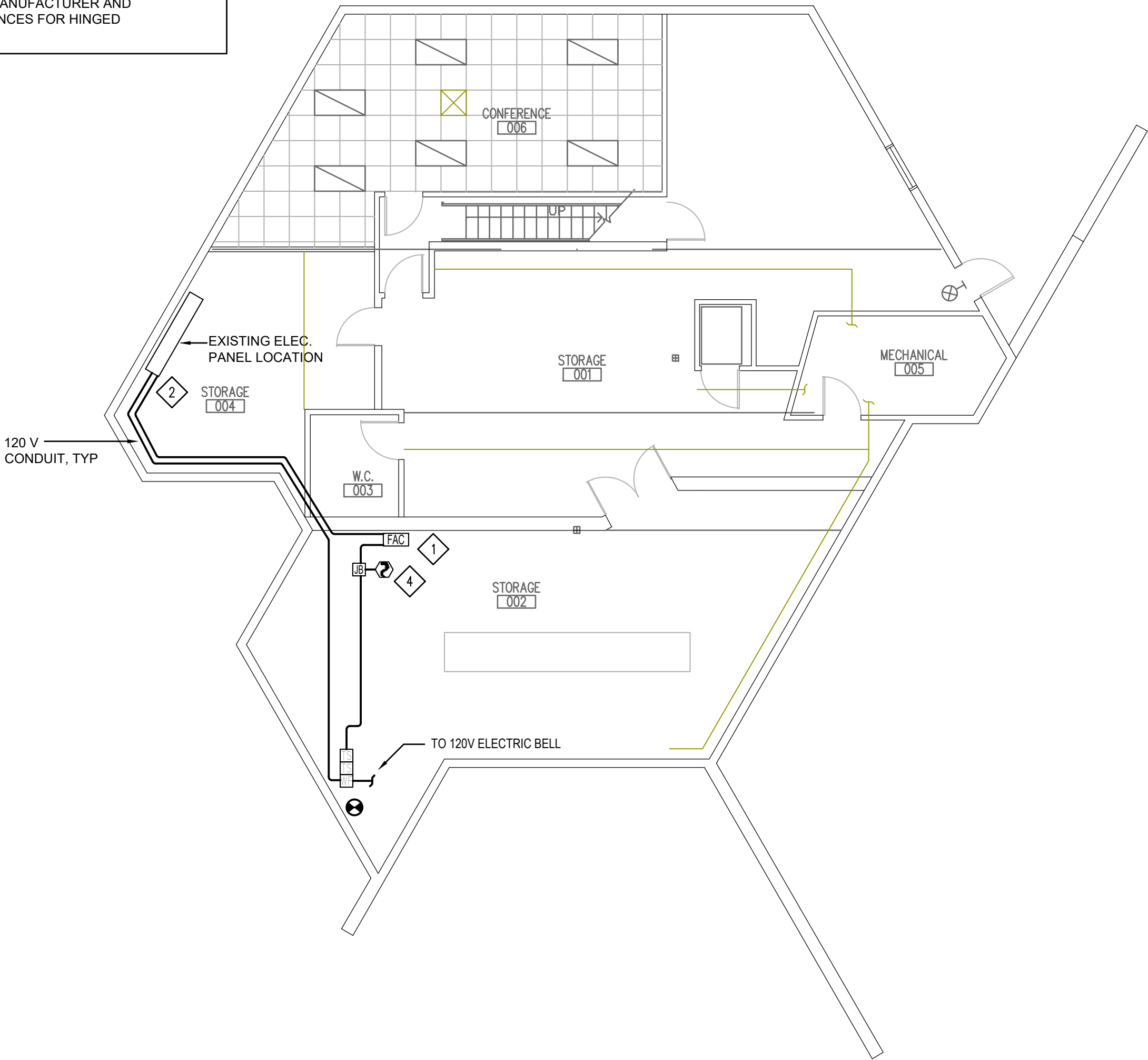
14. ALL EQUIPMENT IN FINISHED AREAS SHALL BE FLUSH OR SEMI-FLUSH MOUNTED TO THE EXTENT SUPPORTED BY THE MANUFACTURER AND ALLOWED BY CODE. ENSURE ADEQUATE CLEARANCES FOR HINGED COVERS/DOORS.

OPERATIONAL MATRIX

- WATERFLOW SWITCH TO ENGAGE ELECTRIC BELL AND ALARM PANEL

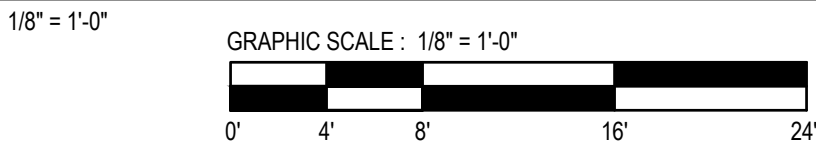
- TAMPER SWITCH TO SUPERVISORY ALARM AT PANEL AND SEND TO SUPERVISORY STATION

- SMOKE DETECTOR TO ALARM PANEL AND NOTIFY RESPONDING STATION



1 FIRE ALARM - RISER DIAGRAM  
FX3.0 NO SCALE

BASEMENT - FIRE ALARM PLAN



FITTINGS AND OUTLETS

PIPE

SCHEDULE 40

1"

SCHEDULE 10

1 1/2" TO 4"

SCHEDULE 40

1" TO 2"

CLASS 300 DUCTILE IRON THREADED FITTINGS (300 PSI RATED)

WELDED FITTINGS WITH ROLL GROOVES (RANK AND RATED DUCTILE IRON)

GROOVED FITTINGS (300 PSI RATED) (PART 1 TAKEOUT 12" & 4" BELL 4")

BLACK CLASS 150 CAST IRON THREADED FITTINGS (150 PSI RATED)

MATERIALS MAY BE OF DOMESTIC OR IMPORT ORIGIN

COFFMAN

ENGINEERS

751 Osterman Dr., Suite 104

Bozeman, MT 59715

ph 406.582.1936

www.coffman.com

ENGINEER

JASON

ANDERSON

No. 11806PE

REGISTERED PROFESSIONAL ENGINEER

APPROVALS & COORDINATION

PREPARED BY

DATE

STATE OF MONTANA

BUILDING CODES DIVISION

EXAMINED BY

DATE

STATE OF MONTANA

BUILDING CODES DIVISION

FINAL

DATE

STATE OF MONTANA

BUILDING CODES DIVISION

WATER FLOW

STATIC PRESSURE: 63 PSI

RESIDUAL PRESSURE: 43 PSI

GPM FLOWING: 688 GPM

TEST TAKEN AT: SNYDER ST

TEST TAKEN BY: GLENDAVE FD

DATE: 09/29/2019

SYSTEM TYPE

NO.

DATE

12-19-2019

REVISIONS

NO.

DATE

12-19-2019

REVISIONS

NO.

DATE

12-19-2019

NEW WET SYSTEM

CONTRACT NAME: MONTANA STATE PARK BASEMENT FIRE ALARM SPRINKLERS

1301 SNYDER ST.

GLENDAVE, MT 59330

CONTRACT WITH: MONTANA FISH, WILDLIFE & PARKS DESIGN & CONSTRUCTION

1522 NINTH AVE.

HELENA, MT 59620

DESCRIPTION: BASEMENT - FIRE ALARM PLAN

SCALE: 1/8" = 1'-0"

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